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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/371,343	08/10/1999	YOSHITAKA NOGUCHI	5087.304-US	9126

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07/25/2002

NOVOZYMES NORTH AMERICA, INC.
500 FIFTH AVENUE
SUITE 1600
NEW YORK, NY 10110

EXAMINER

ALVO, MARC S

ART UNIT

PAPER NUMBER

1731

18

DATE MAILED: 07/25/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/371,343

Applicant(s)

NOGUCHI ET AL.

Examiner

Steve Alvo

Art Unit

1731

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 July 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
 If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
 * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
 a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 15. 6) ☐ Other: _____

Art Unit: 1731

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over ADMITTED PRIOR ART (specification, page 2, line 31-36) in view of WO 96/02632 (equivalent to U.S. Patent 5,658,765).

ADMITTED PRIOR ART teaches pretreating cellulose with an enzyme followed by modifying the enzyme treated cellulose with epoxyalkane in the presence of quaternary ammonium base to reduce the degree of cellulose depolymerization and to produce hydroxyalkyl-cellulose ethers. WO 96/02632 teaches using Bacillus sp. SD902 to produce a xylanase (hemicellulase) enzyme to modify cellulosic pulp. It would have been obvious to substitute the cellulase enzyme of WO/9602632 for the cellulase enzyme of the ADMITTED PRIOR ART to reduce the degree of cellulose depolymerization and to produce hydroxyalkyl-cellulose ethers.

Claims 1, 3, 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over HYATT et al (6,057,438) in view of ^{SATO}HIDEAKI et al (4,250,305).

HYATT et al teaches producing dissolving grade pulp to be used in the preparation of cellulose ethers by treating a pulp with a hemicellulase under conditions in which the hemicellulase is enzymatically active (column 7, lines 4-7). It would have been obvious to the routineer that the xylanase of HYATT et al is a hemicellulase as hemicelloses is chiefly xylans, see HYATT et al, column 2, lines 50-51. HIDEAKI et al teaches that dissolving pulp can be etherified to produce cellulose ethers. It would have

Art Unit: 1731

been obvious to etherify the dissolving pulp of HYATT et al to produce the cellulase ethers in the manner taught by HIDEAKI et al. See HIDEAKI et al, column 16, Example 5, for etherifying dissolving pulp. It is noted that claim 3 calls for the hemicellulase to be xylanase that is the same hemicellulase used by HYATT et al.

Claims 2 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over HYATT et al (6,057,438) in view of HIDEAKI et al (4,250,305) as applied to claim 1 above, and further in view of WO 96/02632 (equivalent to U.S. Patent 5,658,765).

WO 96/02632 teaches using Bacillus sp. SD902 to produce a xylanase (hemicellulase) enzyme to modify cellulosic pulp. It would have been obvious to substitute the cellulase enzyme of WO/9602632 for the xylanase enzyme HYATT et al as they perform the same function of degrading the hemicellulose. See WO/9602632 for hydrolyzing the β -1,4 glycoside bonds. Besides the same bonds would be hydrolyzed when the same enzyme is used, e.g. *Bacillus* sp. SD902.

The rejections based upon WO 96/02632 as the primary reference have been dropped due to Applicant's arguments. The argument that there is no teaching of an etherifying step in the ADMITTED PRIOR ART is not convincing as the ADMITTED PRIOR ART teaches producing hydroxyalkyl-cellulose "ethers". Such involves an etherifying step.

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Art Unit: 1731

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Any inquiry concerning this communication or earlier communications from the **primary examiner** should be directed to **Steve Alvo** whose telephone number is **(703) 308-2048**. The Examiner can normally be reached on Monday - Friday from **6:00 AM - 2:30 PM (EST)**.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Stanley Silverman, can be reached on 703-308-3837.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the **Group receptionist** whose telephone number is **(703) 308-0661**.

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Art Unit: 1731

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MSA
7/23/02



STEVE ALVO
PRIMARY EXAMINER
ART UNIT 1731